Amendments to the Claims

1. (Currently Amended) An electronic toll collection system for a toll road, comprising:

a road-side device;

first means, provided in the road-side device, for transmitting a polling signal, the polling signal at a quasi communication area having an electric field strength between a first electric field strength and a second electric field strength larger than the first electric field strength, the polling signal at a standard communication area having an electric field strength equal to or higher than the second electric field strength;

second means, provided in the road-side device, for receiving a plurality of responses of a single on-vehicle device to the polling signal transmitted by the first means, the polling signal being received by the on-vehicle device when the electric field strength of the polling signal at a position of the on-vehicle device is larger than a strength between the first electric field strength and the second electric field strength, the on-vehicle device passing from the quasi communication area to the standard communication area during the responses;

third means, provided in the road-side device for deciding whether or not the second means receives a response a plural number of times; and

fourth means, provided in the road-side device, for starting next radio communications with the on-vehicle device when the third means decides that the second means receives the plurality of responses to the polling signal.

2. (Currently Amended) An electronic toll collection system for a toll road, comprising:

a first vehicle sensor for detecting a portion of a vehicle at a fist position of a standard communication area on a lane when an on-vehicle device of the vehicle is placed in the standard communication area or a quasi communication area;

a second vehicle sensor for detecting the portion of ~~a~~ the vehicle at a second position of the standard communication area on the lane which is ~~adjacent~~ ahead of the first position when the on-vehicle device of the vehicle is placed in the standard communication area;

first means for starting continuously transmitting a polling signal when the first vehicle sensor detects a vehicle;

second means for receiving a response of an on-vehicle device to the polling signal transmitted by the first means, an electric field strength of the polling signal at the quasi communication area being between a first electric field strength and a second electric field strength larger than the first electric field strength, the electric field strength of the polling signal at the standard communication area being equal to or higher than the second electric field strength; and

third means for, after the second means receives the response, deciding whether or not both the first and second vehicle sensors detect the vehicle, and starting next radio communication with the on-vehicle device in cases where it is decided that both the first and second vehicle sensors detect ~~a~~ the vehicle.

3. (Original) An ETC system as recited in claim 2, wherein the second vehicle sensor is spaced from the first vehicle sensor at an interval of about 80 cm.

4. (Withdrawn) An ETC system for a toll road, comprising:

a road-side device;

first means provided in the road-side device for implementing communications with an on-vehicle device;

second means provided in the road-side device for measuring a lapse of time from a moment at which the first means starts implementing the communications with the on-vehicle device;

third means provided in the road-side device for deciding whether or not the lapse of time which is measured by the second means reaches a prescribed time interval; and

fourth means provided in the road-side device for maintaining the communications with the on-vehicle device which are implemented by the first means in cases where the third means decides that the lapse of time does not reach the prescribed time interval, and terminating the communications with the on-vehicle device after the third means decides that the lapse of time reaches the prescribed time interval.

5. (Previously presented) An electronic toll collection system for a toll road, comprising:

an on-vehicle device:

first means, provided in the on-vehicle device, for receiving data from a road-side device;

second means, provided in the on-vehicle device, for receiving a communication end signal representing an end of transmission of the data when the communication end signal transmitted from the road-side device reaches the on-vehicle device after the first means receives the data therefrom; and

third means, provided in the on-vehicle device, for handling the data received by the first means as effective data regardless of whether or not the second means successfully receives the communication end signal.

6. (Original) An ETC system as recited in claim 5, further comprising means provided in the road-side device for transmitting the communication end signal a plural number of times.

7. (Previously presented) An electronic toll collection system for a toll road, comprising:

a road-side device:

first means, provided in the road-side device, for receiving data from an on-vehicle device;

second means, provided in the road-side device, for receiving a communication end signal representing an end of transmission of the data when the communication end signal transmitted from the on-vehicle device reaches the road-side device after the first means receives the data therefrom; and

third means, provided in the road-side device, for handling the data received by the first means as effective data regardless of whether or not the second means successfully receives the communication end signal.

8. (Original) An ETC system as recited in claim 7, further comprising means provided in the on-vehicle side device for transmitting the communication end signal a plural number of times.

9-12. (Canceled)

13. (Currently Amended) A method in an electronic toll collection system for a toll road, comprising the steps of:

transmitting a polling signal from a road-side device, the polling signal at a quasi communication area having an electric field strength between a first electric field strength and a second electric field strength larger than the first electric field strength, the polling signal at a standard communication area having an electric field strength equal to or higher than the second electric field strength;

enabling the road-side device to receive a plurality of responses of a single on-vehicle device to the polling signal, the polling signal being received by the on-vehicle device when the electric field strength of the polling signal at a position of the on-vehicle device is larger than a strength between the first electric field strength and the second electric field strength, the on-vehicle device passing from the quasi communication area to the standard communication area during the responses;

deciding whether or not the road-side device receives a response a plural number of times; and

enabling the road-side device to start next radio communications with the on-vehicle device when it is decided that the road-side device receives the plurality of responses to the polling signal.

14. (Currently Amended) A method in an electronic toll collection system for a toll road, comprising:

detecting a portion of a vehicle at a fist position of a standard communication area on a lane when an on-vehicle device of the vehicle is placed in the standard communication area or a quasi communication area;

detecting the portion of ~~a~~ the vehicle at a second position of the standard communication area on the lane which is ~~adjacent~~ ahead of the first position when the on-vehicle device of the vehicle is placed in the standard communication area;

starting ~~transmitting~~ a continuous transmission of a polling signal when a vehicle at the first position is detected;

receiving a response of an on-vehicle device to the polling signal, an electric field strength of the polling signal at the quasi communication area being between a first electric field strength and a second electric field strength larger than the first electric field strength, the electric field strength of the polling signal at the standard communication area being equal to or higher than the second electric field strength; and

after the response is received, deciding whether or not both the first and second vehicle sensors detect the vehicle;

starting next radio communication with the on-vehicle device in cases where it is decided that a vehicle at the first position and a vehicle at the second position are detected.

15. (Withdrawn) A method in an ETC system for a toll road, comprising the steps of:

enabling a road-side device to implement communications with an on-vehicle device;

measuring a lapse of time from a moment at which implementing the communications with the on-vehicle device is started;

deciding whether or not the measured lapse of time reaches a prescribed time interval; and

maintaining the communications with the on-vehicle device in cases where it is decided that the measured lapse of time does not reach the prescribed time interval, and terminating the communications with the on-vehicle device after it is decided that the measured lapse of time reaches the prescribed time interval.

16. (Previously presented) A method in an electronic toll collection system for a toll road, comprising the steps of:

receiving data from a road-side device;

receiving a communication end signal representing an end of transmission of the data from the road-side device after the data are received therefrom; and

handling the received data as effective data regardless of whether or not the communication end signal is successfully received.

17. (Previously presented) An on-vehicle device in an electronic toll collection system for a toll road, comprising:

first means for receiving data from a road-side device;

second means for receiving a communication end signal representing an end of transmission of the data when the communication end signal transmitted from the road-side device reaches the on-vehicle device after the first means receives the data therefrom; and

third means for handling the data received by the first means as effective data regardless of whether or not the second means successfully receives the communication end signal.

18. (Previously presented) The system as recited in claim 1, wherein the fourth means implements an accounting process for the on-vehicle device in the radio communications.

19. (Previously presented) The system as recited in claim 1, wherein the second means receives the plurality of responses without transmitting any signal to the on-vehicle device during the reception of the responses, and the fourth means starts the next radio communications with the on-vehicle device when the third means decides that the second means receives the responses without transmitting any signal to the on-vehicle device during the reception of the responses.

20. (Previously presented) The system as recited in claim 2, wherein the third means implements an accounting process for the on-vehicle device in the radio communications.

21. (Previously presented) The system as recited in claim 5, wherein the third means ends communication with the road-side device after handling the data as the effective data.

22. (Previously presented) The system as recited in claim 7, wherein the third means ends communication with the on-vehicle device after handling the data as the effective data.

23. (Previously presented) The method as recited in claim 13, wherein the step of enabling the road-side device to start the next radio communications includes implementing an accounting process for the on-vehicle device in the radio communications.

24. (Previously presented) The method as recited in claim 13, wherein the step of enabling the road-side device to receive the plurality of responses includes enabling the road-side device to receive the plurality of responses without transmitting any signal to the on-vehicle device during the reception of the responses, and the step of enabling the road-side device to start the next radio communications includes enabling the road-side device to start the next radio communications with the on-vehicle device when it is decided that the road-side device receives the responses without transmitting any signal to the on-vehicle device during the reception of the responses.

25. (Previously presented) The method as recited in claim 14, wherein the step of starting next radio communications includes implementing an accounting process for the on-vehicle device in the radio communications.

26. (Previously presented) The method as recited in claim 16, further comprising a step of ending communication with the on-vehicle device after handling the received data as the effective data.

27. (Previously presented) The device as recited in claim 17, wherein the third means ends communication with the road-side device after handling the data as the effective data.